

AMENDMENTS TO THE CLAIMS

Claims 1-18 are pending. All pending claims and their current status have been reproduced below.

1 1. (Original) A method of detecting at least one of a pan and a zoom in a video sequence, comprising:

2
3 selecting a set of frames from a video sequence;
4 determining a set of motion vectors for each frame in the set of frames;
5 identifying at least two largest regions in each frame having motion vectors with substantially similar orientation in a reference coordinate system;
6 determining percentages of each frame covered by the at least two largest regions;
7 determining a statistical measure of the motion vector orientations in the reference coordinate system for at least one of the two largest regions; and
8 comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence.
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1 2. (Original) The method of claim 1, wherein the step of selecting a set of video frames from a video sequence further comprises:
2
3 identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut,
4
5 selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.
6

1 3. (Original) The method of claim 2, wherein frame differences and motion information are used to identify a scene cut.
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1 4. (Original) The method of claim 1, wherein the reference coordinate system is one from the group of reference coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.
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1 5. (Original) The method of claim 1, wherein the percentages of each frame covered
2 by the at least two largest regions are determined from the number of pixels in each region as a
3 percentage of the total number of pixels in a frame.

1 6. (Original) The method of claim 1, wherein the statistical measure is a variance.

1 7. (Original) A system for detecting at least one of a pan and a zoom in a video se-
2 quence, comprising:

3 a preprocessor for selecting a set of frames from a video sequence; and

4 a motion analyzer for determining a set of motion vectors for each frame in the set of
5 frames, identifying at least two largest regions in each frame having motion
6 vectors with substantially similar orientation in a reference coordinate system,
7 determining percentages of each frame covered by the at least two largest re-
8 gions, determining a statistical measure of the motion vector orientations in
9 the reference coordinate system for at least one of the two largest regions, and
10 comparing the percentages and statistical measure to threshold values to iden-
11 tify at least one of a pan and a zoom in the video sequence.

1 8. (Original) The system of claim 7, wherein the step of selecting a set of video
2 frames from a video sequence further comprises

3 identifying a scene cut between two frames in the video sequence and responsive to
4 the identification of a scene cut, and

5 selecting a set of video frames from the video sequence that includes all the frames in
6 the video sequence up to and including a frame just before the scene cut.

1 9. (Original) The system of claim 8, wherein frame differences and motion informa-
2 tion are used to identify a scene cut.

1 10. (Original) The system of claim 7, wherein the reference coordinate system is one
2 from the group of reference coordinate systems consisting of polar, Cartesian, spherical and cy-
3 lindrical coordinate systems.

1 11. (Original) The system of claim 7, wherein the percentages of each frame covered
2 by the at least two largest regions are determined from the number of pixels in each region as a
3 percentage of the total number of pixels in a frame.

1 12. (Original) The system of claim 7, wherein the statistical measure is a variance.

1 13. (Original) A computer-readable medium having stored thereon instructions
2 which, when executed by a processor in a system for detecting at least one of a pan and a
3 zoom in a video sequence, cause the processor to perform the operations of:

- 4 selecting a set of frames from a video sequence;
- 5 determining a set of motion vectors for each frame in the set of frames;
- 6 identifying at least two largest regions in each frame having motion vectors with sub-
7 stantially similar orientation in a reference coordinate system;
- 8 determining percentages of each frame covered by the at least two largest regions;
- 9 determining a statistical measure of the motion vector orientations in the reference
10 coordinate system for at least one of the two largest regions; and
- 11 comparing the percentages and statistical measure to threshold values to identify at
12 least one of a pan or a zoom in the video sequence.

1 14. (Original) The computer-readable medium of claim 13, wherein the step of se-
2 lecting a set of video frames from a video sequence further comprises:
3 identifying a scene cut between two frames in the video sequence; and responsive to
4 the identification of a scene cut,
5 selecting a set of video frames from the video sequence that includes all the frames in
6 the video sequence up to and including a frame just before the scene cut.

1 15. (Original) The computer-readable medium of claim 13, wherein frame differ-
2 ences and motion information are used to identify a scene cut.

1 16. (Original) The computer-readable medium of claim 13, wherein the reference co-
2 ordinate system is polar coordinates.

1 17. (Original) The computer-readable medium of claim 13, wherein the percentages
2 of each frame covered by the at least two largest regions are determined from the number of pix-
3 els in each region as a percentage of the total number of pixels in a frame.

1 18. (Original) The computer-readable medium of claim 13, wherein the statistical
2 measure is a variance.